



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
087992.757	12/17/97	YUKUYAMA	NEC-19854

MM21/1207

HAYES SOLOWAY HENNESSEY GROSSMAN
& HAGE
175 CANAL STREET
MANCHESTER NH 03101

EXAMINER

WILLE, D

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 12/07/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/992,767

Applicant(s)
Yokoyama

Examiner
Douglas Wille

Group Art Unit
2814



☒ Responsive to communication(s) filed on Mar 23, 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-10 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-10 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2814

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1, 5, 6, 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
2. Claim 1 refers the sidewall as "...covering said side surface lower than a position which is lower than an upper end...". Lower than a position that is lower is not understood and must be corrected. This appears to suggest that the claim should read ...lower than the upper end.. If this is so, the claim should so state. The other claims depend directly or indirectly on claim 1 and therefore have the same problem.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 - 4, 7 and 8, in so far as they are understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al. in view of Miller et al.

Art Unit: 2814

5. With respect to claims 1 - 4, 7 and 8, Roberts et al. show (see cover Figure and column 2, line 37 - column 7, line 12) a structure with a wide via (low aspect ratio) in an insulating layer 12 where a tapered refractory metal layer 30 is formed in the corners of the hole to improve step coverage of the metal film 40 and the upper end of the hole is funnel shaped. Miller et al. show (see cover Figure and column 5, line 22 - column 6, line 30) the filling of a high aspect ratio hole (column 2, line 43) with a refractory metal plug. It would have been obvious to include a technique for filling a high aspect ratio hole to an approach to filling a low aspect ratio hole to provide a broader applicability to the electroding technique.

6. Claims 1 - 4, 7 and 8, in so far as they are understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over McDavid in view of Miller et al.

7. With respect to claims 1 - 4, 7 and 8, McDavid shows (see cover Figure and column 2, line 19 - line 61) a structure with a wide via (low aspect ratio) in an insulating layer 21 where a tapered refractory metal layer 13 is formed in the corners of the hole to improve step coverage of the metal film 10 and the upper end of the hole is funnel shaped. Miller et al. show (see cover Figure and column 5, line 22 - column 6, line 30) the filling of a high aspect ratio hole (column 2, line 43) with a refractory metal plug. It would have been obvious to include a technique for filling a high aspect ratio hole to an approach to filling a low aspect ratio hole to provide a broader applicability to the electroding technique.

8. Claims 5, 6, 9 and 10, in so far as they are understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over McDavid and Roberts et al. in view of Miller et al.

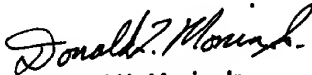
Art Unit: 2814

9. McDavid shows a refractory layer which is high in form and Roberts et al. show a refractory layer that is low in form. Since both show a useful structure it would have been obvious to use any form in-between the two.


Conclusions

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A. Wille whose telephone number is (703) 308-4949.

11. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose number is (703) 308-0956.


Donald L. Monin, Jr.
Primary Examiner

Olik Chaudhuri
Supervisory Patent Examiner
Art Unit 2814

DAW 

December 2, 1998